

## CLAIMS

What is claimed is:

1. An instance browser comprising:  
a repository of class and relation definitions;  
a server for responding to queries relating to class and relation definitions in said repository; and  
a graphical user interface including icons for representing instances of classes.
2. The instance browser of claim 1 wherein an icon is associated with an instance using a global identifier (GID).
3. The instance browser of claim 2 wherein the GID is a function in the repository.
4. The instance browser of claim 3 wherein the GID is a function of the largest class in the repository.
5. The instance browser of claim 1 wherein an icon is associated with an instance based on a view of the instance.
6. The instance browser of claim 1 wherein an image is associated with an icon by the class, an instance of which is represented by the icon.
7. The instance browser of claim 1 wherein an image is associated with an icon by a function from instances to images.
8. The instance browser of claim 7 wherein the function from instances to images is defined within the repository.
9. The instance browser of claim 7 wherein the function from instances to images is selected by a user from among a plurality of functions.

1 10. The instance browser of claim 1 wherein a menu associated with  
2 an icon lists functions having as domain the class, an instance of which is  
3 represented by the icon.

1 11. The instance browser of claim 10 further comprising a function  
2 search tool for searching for functions having as domain the class, an instance of  
3 which is represented by the icon.

1 12. The instance browser of claim 11 wherein said function search  
2 tool searches over a network.

1 13. The instance browser of claim 11 wherein said function search  
2 tool searches over a central repository.

1 14. The instance browser of claim 11 wherein said function search  
2 tool searches for functions having as domain the class, an instance of which is  
3 represented by the icon, when a user requests to see the menu associated with the  
4 icon.

1 15. The instance browser of claim 10 wherein icons are created for  
2 values of listed functions.

1 16. The instance browser of claim 1 wherein said graphical user  
2 interface displays collections of icons for collections of instances of classes.

1 17. The instance browser of claim 16 wherein a collection of  
2 instances is defined by a logical term.

1 18. The instance browser of claim 17 wherein the logical term is a  
2 single relation from the ontology with instances specified for all but one  
3 parameter.

1 19. The instance browser of claim 17 further comprising an instance  
2 search tool for searching for instances to display in the collection.

1 20. The instance browser of claim 19 wherein said instance search  
2 tool searches for instances over a network.

1 21. The instance browser of claim 19 wherein said instance search  
2 tool searches for instances over a central repository.

1 22. The instance browser of claim 19 wherein said instance search  
2 tool includes an inference engine.

1 23. The instance browser of claim 16 wherein said graphical user  
2 interface presents instances of a collection grouped by subclasses to which they  
3 belong.

1 24. The instance browser of claim 1 further comprising a filter, to  
2 filter at least one of classes, relations and instances based on authorship.

1 25. A method for instance browsing comprising:  
2 managing a repository of class and relation definitions, and  
3 instance documents for instances of classes and for tuples of relations;  
4 responding to queries relating to class and relation definitions in  
5 the repository; and  
6 displaying icons representing instances of classes.

1 26. The method of claim 25 further comprising associating an icon  
2 with an instance using a global identifier (GID).

1 27. The method of claim 26 wherein the GID is a function in the  
2 repository.

1 28. The method of claim 27 wherein the GID is a function of the  
2 largest class in the repository.

1 29. The method of claim 25 further comprising associating an icon  
2 with an instance based on a view of the instance.

1 30. The method of claim 25 further comprising associating an image  
2 with an icon by the class, an instance of which is represented by the icon.

1 31. The method of claim 25 further comprising associating an image  
2 with an icon by a function from instances to images.

1 32. The method of claim 31 wherein the function from instances to  
2 images is defined within the repository.

1 33. The method of claim 31 wherein the function from instances to  
2 images is selected by a user from among a plurality of functions.

1 34. The method of claim 25 further comprising associating a menu  
2 with an icon, the menu listing functions having as domain the class, an instance of  
which is represented by the icon.

1 35. The method of claim 34 further comprising searching for  
2 functions having as domain the class, an instance of which is represented by the  
icon.

1 36. The method of claim 35 wherein said searching searches over a  
2 network.

1 37. The method of claim 35 wherein said searching searches over a  
2 central repository.

1 38. The method of claim 35 wherein said searching searches for  
2 functions having as domain the class, an instance of which is represented by the  
3 icon, when a user requests to see the menu associated with the icon.

1 39. The method of claim 34 further comprising creating icons for  
2 values of listed functions.

1 40. The method of claim 25 wherein said displaying icons  
2 comprises:  
3 searching for instance documents including a given instance and  
4 a reference to an icon associated therewith;  
5 searching for instance documents including the given instance  
6 and a caption associated therewith;  
7 displaying the icon and the caption associated with the given  
8 instance.

1 41. The method of claim 40 wherein said displaying icons further  
2 comprises attaching a pop-up menu to the displayed icon, comprising:  
3 searching for the class, an instance of which is represented by the  
4 icon; and  
5 for functions whose domain is the class, adding a corresponding  
6 item to the pop-up menu.

1 42. The method of claim 41 further comprising grouping functions  
2 whose domain is the class into a sub-menu within the pop-up menu.

1 43. The method of claim 41 wherein said displaying icons further  
2 comprises, for functions whose domain is the class:  
3 searching for instance documents including the function; and  
4 creating an icon for the instance in the instance document.

1 44. The method of claim 43 wherein said searching for instance  
2 documents steps comprise filtering instance documents based on authorship.

1 45. The method of claim 25 wherein said displaying icons  
2 comprises:  
3 providing a definition of a collection, including a name of a  
4 relation and an instance for all but one missing class in the domain of the relation;  
5 searching for instance documents including the relation;  
6 for each instance document including the relation, searching for  
7 tuples where the instance of the instance document is the element in the missing  
8 class from the domain of the relation;

9 for each instance document including at least one such tuple,  
10 creating an icon for the instance of the instance document.

1 46. The method of claim 45 wherein said searching for instance  
2 documents comprises filtering instance documents based on authorship.

1 47. The method of claim 46 wherein said searching searches over a  
2 network.

1 48. The method of claim 46 wherein said searching searches over a  
2 central repository.

1 49. The method of claim 46 wherein said searching uses an inference  
2 engine.

1 50. The method of claim 45 further comprising deriving a caption for  
2 the collection.

1 51. A distributed ontology system comprising:  
2 a central computer comprising a global ontology directory;  
3 a plurality of ontology server computers, each comprising:  
4 a repository of class and relation definitions;  
5 and  
6 a server for responding to queries relating to  
7 class and relation definitions in said repository;  
8 a computer network connecting said central computer with said  
9 plurality of ontology server computers; and  
10 a graphical user interface including icons for representing  
11 instances of classes.

1 52. The system of claim 51 wherein an icon is associated with an  
2 instance using a global identifier (GID).

1 53. The system of claim 52 wherein the GID is a function in the  
2 global ontology directory.

1 54. The system of claim 53 wherein the GID is a function of the  
2 largest class in the global ontology directory.

1 55. The system of claim 51 wherein an icon is associated with an  
2 instance based on a view of the instance.

1 56. The system of claim 51 wherein an image is associated with an  
2 icon by the class, an instance of which is represented by the icon.

1 57. The system of claim 51 wherein an image is associated with an  
2 icon by a function from instances to images.

1 58. The system of claim 57 wherein the function from instances to  
2 images is defined within the global ontology directory.

1 59. The system of claim 57 wherein the function from instances to  
2 images is selected by a user from among a plurality of functions.

1 60. The system of claim 51 wherein a menu associated with an icon  
2 lists functions having as domain the class, an instance of which is represented by  
3 the icon.

1 61. The system of claim 60 further comprising a function search tool  
2 for searching for the functions having as domain the class, an instance of which is  
3 represented by the icon.

1 62. The system of claim 61 wherein said function search tool  
2 searches over a network.

1 63. The system of claim 61 wherein said function search tool  
2 searches over a central repository.

1 64. The system of claim 61 wherein said function search tool  
2 searches for functions having as domain the class, an instance of which is

3 represented by the icon, when a user requests to see the menu associated with the  
4 icon.

1 65. The system of claim 60 wherein icons are created for values of  
2 the listed functions.

1 66. The system of claim 51 wherein said graphical user interface  
2 displays collections of icons for collections of instances of classes.

1 67 The system of claim 66 wherein a collection of instances is  
2 defined by a logical term.

1 68. The system of claim 67 wherein the logical term is a single  
2 relation from the ontology with instances specified for all but one parameter.

1 69 . The system of claim 67 further comprising an instance search  
2 tool for searching for instances to display in the collection.

1 70. The system of claim 69 wherein said instance search tool  
2 searches for instances over a network.

1 71. The system of claim 69 wherein said instance search tool  
2 searches for instances over a central repository.

1 72. The system of claim 69 wherein said instance search tool  
2 includes an inference engine.

1 73. The system of claim 66 wherein said graphical user interface  
2 presents instances of a collection grouped by subclasses to which they belong.

1 74. The system of claim 51 further comprising a filter, to filter at  
2 least one of classes, relations and instance documents based on authorship.

1 75. A distributed ontology method comprising:



2 . managing a plurality of repositories of class and relation  
3 definitions;  
4 managing a global ontology directory;  
5 responding to queries relating to class and relation definitions in  
6 at least one repository; and  
7 displaying icons representing instances of classes.

1 76. The method of claim 75 further comprising associating an icon  
2 with an instance using a global identifier (GID).

1 77. The method of claim 76 wherein the GID is a function in the  
2 global ontology directory.

1 78. The method of claim 76 wherein the GID is a function of the  
2 largest class in the global ontology directory.

1 79. The method of claim 75 further comprising associating an icon  
2 with an instance based on a view of the instance.

1 80. The method of claim 75 further comprising associating an image  
2 with an icon by the class, an instance of which is represented by the icon.

1 81. The method of claim 75 further comprising associating an image  
2 with an icon by a function from instances to images.

1 82. The method of claim 81 wherein the function from instances to  
2 images is defined within the global ontology directory.

1 83. The method of claim 75 wherein the function from instances to  
2 images is selected by a user from among a plurality of functions.

1 84. The method of claim 75 wherein a menu associated with an icon  
2 lists functions having as domain the class, an instance of which is represented by  
3 the icon.

1 85. The method of claim 84 further comprising searching for  
2 functions having as domain the class, an instance of which is represented by the  
3 icon.

1 86. The method of claim 85 wherein said searching searches over a  
2 network.

1 87. The method of claim 85 wherein said searching searches over a  
2 central repository.

1 88. The method of claim 85 wherein said searching searches for the  
2 functions having as domain the class, an instance of which is represented by the  
3 icon, when a user requests to see the menu associated with the icon.

1 89. The method of claim 84 further comprising creating icons for  
2 values of listed functions.

1 90. The method of claim 75 wherein said displaying icons  
2 comprises:

3 searching for instance documents including a given instance and  
4 a reference to an icon associated therewith;

5 searching for instance documents including the given instance  
6 and a caption associated therewith;

7 displaying the icon and the caption associated with the given  
8 instance.

1 91. The method of claim 90 wherein said displaying icons further  
2 comprises attaching a pop-up menu to the displayed icon, comprising:

3 searching for the class, an instance of which is represented by the  
4 icon; and

5 for functions whose domain is the class, adding a corresponding  
6 item to the pop-up menu.

1 92. The method of claim 91 further comprising grouping functions  
2 whose domain is the class into a sub-menu within the pop-up menu.

1 93. The method of claim 91 wherein said displaying icons further  
2 comprises, for each function having as domain the class, an instance of which is  
3 represented by the icon:

4 searching for instance documents including the function; and  
5 creating an icon for the instance in the instance document.

1 94. The method of claim 93 wherein said searching for instance  
2 documents steps comprise filtering instance documents based on authorship.

1 95. The method of claim 75 wherein said displaying icons  
2 comprises:

3 providing a definition of a collection, including a name of a  
4 relation and an instance for all but one missing class in the domain of the relation;

5 searching for instance documents including the relation;

6 for each instance document including the relation, searching for  
7 tuples where the instance of the instance document is the element in the missing  
8 class from the domain of the relation;

9 for each instance document including at least one such tuple,  
10 creating an icon for the instance of the instance document.

1 96. The method of claim 95 wherein said searching for instance  
2 documents comprises filtering instance documents based on authorship.

1 97. The method of claim 96 wherein said searching searches over a  
2 network.

1 98. The method of claim 96 wherein said searching searches over a  
2 central repository.

1 99. The method of claim 96 wherein said searching uses an inference  
2 engine.

1 100. The method of claim 95 further comprising deriving a caption for  
2 the collection.